

SUMMARY

In a case of sterile postpneumococcal empyema rapid resolution of the lesion occurred upon intrapleural instillation of streptokinase-streptodornase, following six weeks of unsuccessful conventional management.

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Nephrogram Following Acute Myocardial Infarction

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THE TERM NEPHROGRAM denotes opacification of the roentgenographic renal shadows owing to the presence of contrast media in either the finer elements of the renal vasculature or the various segments of the nephron or both. Nephrograms were first observed in cases of obstructive uropathy.^{3, 5} In such conditions the increased intrapelvic pressure causes a decrease in glomerular filtration but does not interfere with the flow of the medium across the tubular epithelium into the lumina where, since it cannot be excreted, it concentrates.²

The radiographic demonstration of vessels in renal parenchyma was first noted as an incidental finding during angiocardiology.⁴ It may occur also during translumbar aortography. These procedures result in high concentrations of the medium in the blood in the renal vessels. Nephrograms may occur in association with a reduction in blood pressure during intravenous pyelography, as was reported by Wickbom.⁶ In the two cases in which Wickbom observed the phenomenon the decrease in blood pressure was thought to be due primarily to the use of a compression band on the aorta and perhaps secondarily to a reflex in the autonomic nervous system.

In the case to be reported here, no compression was used and nephrogram occurred in association with a decrease in blood pressure owing to acute myocardial infarction.

CASE REPORT

A 67-year-old white male with a diagnosis of hypertensive cardiac disease was referred for intravenous urography with the additional diagnosis of benign prostatic hypertrophy with symptoms of urgency and frequency of urination, nocturia and dribbling. Twenty cc. of 35 per cent Diodrast® was given intravenously following negative result of an intradermal test for Diodrast sensitivity. Approximately 20 minutes later the patient was in a state of shock. An electrocardiogram made within an hour showed posterior myocardial infarction. The blood pressure at this time was 60 mm. of mercury systolic and 50 mm. diastolic. In subsequent review of films it was noted that kidney and psoas shadows were plainly visible on a film (Figure 1) taken before the administration of Diodrast. Renal opacification with only minimal dye in the urinary bladder and none in the pelvis and calyces was seen on subsequent serial films at 5, 10, 15 and 25 minutes (Figure 2).

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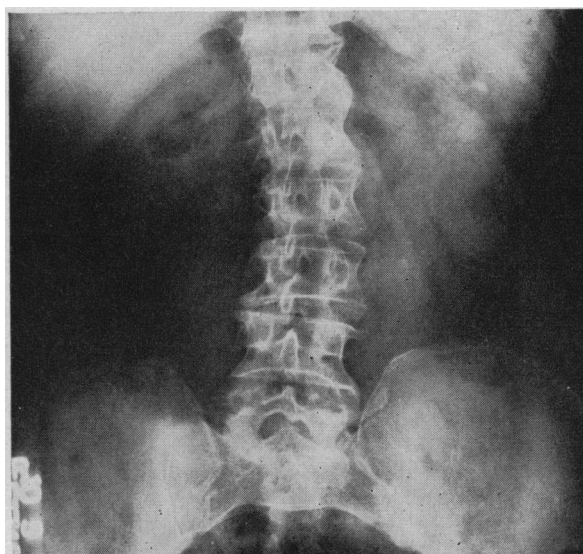


Figure 1.—Preliminary film of abdomen taken before intravenous urography, showing kidney and psoas shadows.

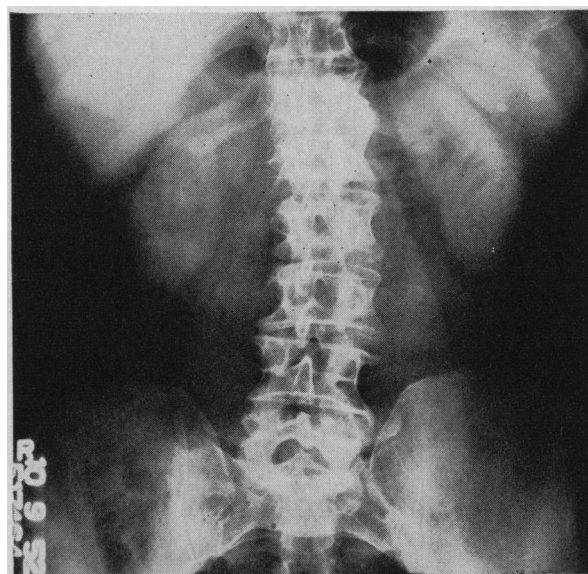


Figure 2.—Nephrogram. Kidney shadows are opacified.

DISCUSSION

It is known that urinary filtration stops when the arterial systolic blood pressure decreases to 60 mm. of mercury, as it did in the present case owing to myocardial infarction. With the arterial pressure at that level the pressure in the afferent arterioles is about 36 mm. of mercury and the orthostatic pressure is approximately equal to the pressure in the renal calyces (about 5 mm. of mercury) when the osmotic pressure of albumin in the blood (30 to 40 mm. of mercury) is taken into account.¹

SUMMARY

Opacification of renal shadows during intravenous urography may occur in the presence of a decrease in blood pressure. A case in which a nephrogram resulted from decreased pressure owing to acute myocardial infarction is reported.

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Coronary Insufficiency Following Intravenous Pyelography

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AS WITH MANY another valuable diagnostic procedure, some risk, although statistically slight, is entailed in intravenous pyelography. In 1942, Pendergrass and co-workers¹ became interested in this subject as the result of the death of a patient following an injection of Diodrast.[®] They sent three thousand questionnaires to radiologists and urologists in the United States and Canada, and the replies revealed 26 deaths following Diodrast injection in addition to 11 that already had been reported. Since then there have been additional reports of death from this cause.^{1, 2} The survey by Pendergrass also revealed that non-fatal reactions occasionally occurred following pyelography, some minor in nature, others more alarming. In the following case there was an unusual sequence of symptoms in a patient following pyelography, specifically a reaction consisting of pain in the chest and electrocardiographic evidence of coronary insufficiency.

CASE REPORT

A 57-year-old white male carpenter was admitted to hospital Jan. 14, 1953, with a presumptive diagnosis of carcinoma of the stomach based on roentgenograms taken by a physician in private practice. The patient related that on December 23, 1952, he had had "flu" and had been given penicillin by mouth for three days. A week later he was told that he looked anemic. Laboratory studies, the patient said, had shown "hemoglobin below 62" and blood in the stool. Carcinoma of the stomach was diagnosed on the basis of some irregularity about the pylorus noted in a gastrointestinal series.

Questioning of the patient elicited no indication of symptoms referable to the gastrointestinal tract. He had noted no lessening of appetite and there had been no loss of weight.

Six years previously he was refused insurance because of albumin in the urine, and in early December, 1952, he was rejected as a blood donor when, for the first time, he was told that his blood pressure was high.

Upon physical examination the patient appeared to be well nourished and in no distress, but the skin was distinctly sallow. The temperature, pulse and respirations were

normal. The blood pressure was 192 mm. of mercury systolic and 102 mm. diastolic. The radial arteries were slightly thickened, and the arterioles of the ocular fundi were narrowed and tortuous. The heart tones were normal except for slight accentuation of the second aortic sound. The lung fields were clear to auscultation. No masses, enlargement of organs or tenderness were noted in palpation of the abdomen. No abnormalities were noted in digital examination of the rectum and prostate.

Erythrocytes numbered 2,800,000 per cu. mm. of blood and the hemoglobin content was 9.3 gm. per 100 cc. The number of leukocytes and the differential were within normal range. Urinalysis showed a trace of albumin, and upon microscopic examination a moderate number of hyaline, granular, and epithelial casts was noted. A urine concentration test showed a fixed specific gravity of 1.010. The urea nitrogen content of the blood was 49 mg. per 100 cc. at the time of admittance and a week later it was 60 mg. per 100 cc. Results of additional studies of the blood were as follows: creatinine, 4.5 mg. per 100 cc.; carbon dioxide combining power, 41 volumes per 100 cc.; total proteins, 6.3 gm. per 100 cc., with 4 gm. albumin and 2.3 gm. of globulin per 100 cc.; calcium 11.2 mg. per 100 cc.; phosphorus 4 mg. per 100 cc.; glucose (fasting) 105 mg. per 100 cc. The result of a Kahn test was negative for syphilis.

In an electrocardiogram there were inverted T waves in aVL and low amplitude T waves in V-6, suggesting myocardial disease of the lateral wall (Figure 1, A).

No abnormalities were noted in a roentgenogram of the chest. In roentgen study of the upper gastrointestinal tract an ulcer crater in the pyloric region of the stomach, with adjacent mucosal inflammatory changes, was noted. An intravenous pyelogram, described below in detail, failed to produce satisfactory visualization due to poor excretion of the dye.

The patient was treated with a conventional "ulcer regimen" and remained free of digestive complaints. Healing of the ulcer crater was observed in later roentgen studies.

It was felt that the patient also had chronic nephritis of unknown cause, and further diagnostic studies were requested. Intravenous pyelography was carried out on January 28, 1953, with 20 cc. of 75 per cent Neo-Iopax[®] used as the contrast medium. The customary procedure for intravenous pyelography at this hospital is to inject 1 cc. of the dye, wait one minute, and, if no untoward reaction or symptoms develop, inject the remainder of the dye over a period of one to two minutes. The patient received the dye at 9:30 a.m. without any difficulty, and roentgenograms were taken

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